

### **REMARKS**

Claims 1-4 and 6-23 were pending in the subject application. In reply to a previously-issued restriction/election requirement, Applicants provisionally elected claims 1-10, 15 and 22 with traverse for prosecution in the present application. In the last office action, the Examiner made final the restriction requirement and withdrew from consideration claims 11-14, 16-21 and 23. The withdrawn claims have now been cancelled in the present response. Applicants note, however, that paragraph 3 of the April 14, 2005 Office Action indicates that claims 10-14, 16-21 and 23 are the claims that are drawn to the non-elected invention and which must be cancelled from the present application. Since paragraph 1(a) and prior correspondences indicates that claims 11-14, 16-21 and 23 are the non-elected claims, Applicants assume that the inclusion of claim 10 in paragraph 3 of the Office Action was in error, and have not cancelled claim 10.

Claims 1 has been amended and new claims 24 – 28 have been added herein. Support for the amendments and new claims can be found in the specification, particularly on page 5, lines 20-22, for the amendment to claim 1; page 8, lines 4-11, for new claim 24; page 8, lines 26-30, and example 1(c) for new claim 25; page 9, lines 5-11, for new claim 26; page 7, lines 16-26, for new claim 27; and example 5 for new claim 28. The amendments to the claims add no new matter. Applicants respectfully request entry of the claim amendments.

In the last Office Action dated September 3, 2004, the Examiner indicated that claim 5 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The Examiner stated that none of the prior art of record appear to teach, suggest, or render obvious the noble metal or noble metal/base metal nanoparticles embedded in an aqueous solution of a temporary stabilizer which is a polysaccharide wherein the solution has a total chloride concentration of less than 100 ppm. Applicants amended claim 1 to include all the limitations of claim 5.

The Examiner now has rejected the pending claims under newly cited art: US Patent No. 4,421,617 (Gratzel) in view of either US Patent 5,489,563 (Brand) or US Patent No. 5,767,036 (Freund). The Examiner maintains that the only difference between claim 1 of the present application and Gratzel is that Gratzel does not teach or suggest a total chlorine content of less than 100 ppm. The Examiner argues that when a person of ordinary skill in the art views Gratzel in combination with the other cited references that claim 1 of the present application would be rendered obvious.

Applicants disagree. Gratzel does not disclose nanoparticles embedded in an aqueous solution of a temporary stabilizer, as the phrase “temporary stabilizer” is used in the present application. Gratzel discloses a catalytic dispersion having protective agents in order to generate a stable dispersion of the precious metal colloids for hydrogen-generating photolytic systems. The protective agent generates a transparent and colorless aqueous medium. This medium remains essentially colorless and transparent (Gratzel, col. 1, lines 40-44). The protective agents are water permeable and are adsorptive to the catalyst metal particles (that is, showing an affinity for the metal particles in solution) (see col. 1, lines 38-39; col. 1, lines 60-62; and col. 10, lines 6-16).

In contrast, the present application discloses temporary stabilizers “which must be capable of being removed effectively” (see page 5, lines 20-28, of the specification of the present application – “Particularly important here is an easy decomposition”). The preferred polysaccharides of the present invention are heteropolysaccharides, selected from the group consisting of gum arabic, xanthan gum, tragacanth gum or mixtures thereof (page 5, lines 5-7 and dependent claim 8).

There is no suggestion or teaching in Gratzel to use an aqueous solution of a temporary stabilizer which is a polysaccharide capable of being removed effectively by decomposition, as required by the presently pending claims. And there is no teachings of the particular heteropolysaccharides set forth in dependent claim 8. In fact, the use of a

temporary stabilizer which is capable of being removed by decomposition would defeat the goals of the Gratzel patent – that is, the ability to use a stabilized metal catalyst in colloidal form for photolytic production of hydrogen. Temporary stabilizers which are easily decomposed and removed would not provide the required protective agent that is sought by Gratzel in the practice of his invention. Accordingly, one of ordinary skill in the art would be lead away from the present invention by the teaching of Gratzel. Additionally, as the Examiner has pointed out, Gratzel fails to disclose an aqueous solution having a total chlorine concentration of less than 100ppm.

Moreover, the secondary references cited by the Examiner (Brand and Freund) do not provide the teachings missing from Gratzel in order to achieve the present invention. Even if the Examiner is correct in alleging that one skilled in the art would be motivated to combine the teachings of Gratzel with either Brand or Freund (which they would not be), the present invention still would not be achieved. At best, one would obtain a protective agent with a lower chlorine concentration. A temporary stabilizer capable of being a removed efficiently by decomposition, as required by the present invention, would not be obtained since it is neither taught nor suggested by the cited references, either alone or in combination.

Additionally, the polysaccharides mentioned by Gratzel teach away from those that are useful in the presently claimed invention. As indicated in the application, the temporary stabilizers used in the presently claimed invention must be polysaccharides capable of being removed efficiently by decomposition (see page 5, lines 20-29) and are highly water soluble, preferably exhibiting water solubility of about 5-40% by weight while maintaining low viscosity (page 5, lines 1-5). Preferred polysaccharides include heteropolysaccharides such as gum arabic, xanthan gum, and tragacanth gum or mixtures thereof (see page 5, lines 5-7). These specific polysaccharides are set forth in claim 8 of the present application. Again, there is no teaching or suggestion in the cited references of these preferred polysaccharides, nor is there any motivation or suggestion in the cited references for substituting the polysaccharides mentioned in Gratzel with those specified

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in the present application.

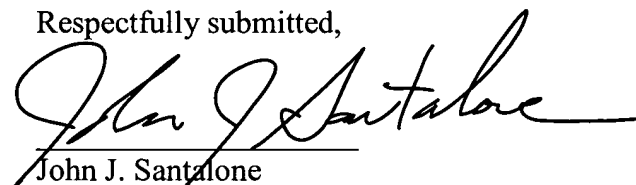
With respect to the rejection of claims 15 and 22, Applicants have cancelled these claims and presented new claims 24-28. Newly presented claims 24-28 are not directed to membrane electrode assemblies, *per se*, as were claims 15 and 22, but rather are directed to methods of using the claimed nanoparticles of the invention. In light of cancellation of claims 15 and 22, and presentation of new claims 24-28, applicants believe that the rejections set forth in the April 14<sup>th</sup> Office Actions with respect to claims 15 and 22 are now moot.

In view of the foregoing amendments, and the remarks set forth above, reconsideration of the rejections set forth in the April 14, 2005 Office Action and allowance of the subject application are respectfully solicited.

Enclosed is a check for \$120 to cover the fee for a one-month extension of time. No additional fee is believed to be due with respect to the filing of this amendment. If any additional fees are due, or an overpayment has been made, please charge, or credit, our Deposit Account No. 11-0171 for such sum.

If the Examiner has any questions regarding the present application, the Examiner is cordially invited to contact Applicants' attorney at the telephone number provided below.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "John J. Santalone", written over a horizontal line.

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